BREAKTHROUGH

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MUSIC AND HEMI-SYNC IN THE TREATMENT OF CHILDREN WITH DEVELOPMENTAL DISABILITIES

by

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Dr. Suzanne Morris is a speech-language pathologist who currently has a private practice in Faber, Virginia and trains therapists in teaching oral acquisition skills. For the past three years (1982-1985) the role of music and Hemi-Sync has been explored in the rehabilitation of 20 developmentally disabled children. The children ranged in age from 5 months to 8 years with an average age of 2 years. Within the broad catagory of developmental disability the children had received specific diagnoses of cerebral palsy (16), mental retardation (10), autism (5), and uncontrolled seizure disorder (4). The children were referred for therapy because of severe feeding and pre-speech problems. Eighteen of the children were non-verbal and non-ambulatory because of the motor incoordination of cerebral palsy or an overall delay in development.

THE PROGRAM

Music was included in the child's program as a way of creating an auditory environment to make learning easier. Music with a regular rhythm and a tempo of 60 beats-per-minute was selected to provide a quieting background and a regular rhythm and rate which was similar to the tempo of the heartbeat, sucking and walking rhythms. This structure of music has also been shown to increase the learning of verbal skills and enhance their retention. It is also probable that the regular rhythm and specific tempo of this music contributes to a greater symmetry of function of the two hemispheres of the brain. Largo and adagio movements from baroque composers such as Vivaldi, Bach, Albinoni and Correlli were selected for the therapy program. Modern compositions by Halpern ("Comfort Zone") and Hoffman ("Mind-Body Tempo") which contain the same structural elements were also used.

The response to this "superlearning music" was very positive. Most children became calmer and less distractible during the therapy sessions. Several showed a more normal response to touch and an increased ability to organize sensory information. The improved reactions were noted during the therapy period. There appeared to be minimal carryover of the improved sensory organization.

Because of the positive response to this type of treatment, a comparison of the child's response to music alone and music containing Hemi-Sync signals was begun. In the initial phases of the program, the Metamusic series had not yet been produced. Robert Monroe bedded a special tape of Halpern's "Comfort Zone" with Hemi-Sync signals. This enabled a comparison of the child's response to therapy under three conditions: a) no music, b) "Comfort Zone" and c) "Comfort Zone + Hemi-Sync. When the child showed a neutral or positive response to the Hemi-Sync version of "Comfort Zone", other music containing the Hemi-Sync signals was introduced into the program. This included "Metamusic Blue", "Metamusic Green", "Soft and Still" and a wide variety of quiet background music combined with the Hemi-Sync synthesizer.

The child's non-verbal responses to therapy were carefully documented. Each change of expression, body movement, shift of attention, etc. was interpreted as a means of communicating like or dislike, comfort or discomfort with what was occurring at that moment. These non-verbal reactions became the clearest clues indicating whether a musical or Hemi-Sync background was acceptable to the child's system. Non-verbal responses were positive in 18 of the 20 children. Two children showed negative responses. One older boy became more distractible and hyperirritable; a five-month-old girl screamed with the Hemi-Sync music. Both children tended to become irritable with high-frequency sounds and responded negatively to any music containing higher pitches. It is possible that the high frequency tones which are often used in creating the Hemi-Sync signal may have been the interfering factors for these children.

The frequency with which Hemi-Sync was used and the total length of time in a program with a Hemi-Sync environment varied. The 18 children who continued to receive therapy combined with Hemi-Sync music were exposed to the signals primarily during their therapy periods. These varied from one to eight 45-minute therapy sessions per month. Hemi-Sync tapes were provided to the families of 11 children for use during one play-learning session at home and while falling asleep at night. The total length of time spent using Hemi-Sync tapes varied from one month to three years. The majority of the children were involved with the tapes for approximately 4-6 months.

The purpose of the observations was to obtain a clinical impression of the role which Hemi-Sync in a musical format could play in the feeding and pre-speech rehabilitation of the child. The study was explorational in nature and formal data collection was not included. Clinical records were maintained which described the activities worked on, the child's response and the type of auditory background which was used.

TRENDS

Fifteen of the 18 children who continued to receive the music containing Hemi-Sync showed positive changes in behaviors. During treatment sessions which did not utilize a musical or Hemi-Sync background, these changes were not evident. In several instances behavioral changes were noted with the "superlearning music" background; however the degree of change and permanence of change was more pronounced when Hemi-Sync was combined with the music. Three of the 18 children showed minimal or inconsistent changes in their behaviors with Hemi-Sync.

Five behavioral areas showed the greatest change as a result of treatment provided with a Hemi-Sync background.

DISORGANIZED SENSORY INPUT may be described as difficulty processing and integrating multiple sensory information. The child is unable to filter, discriminate and organize sensory input. The world becomes an overstimulating, chaotic environment. Reactions such as tactile hypersensitivity, irritability, disorganized movement patterns and distractibility are common. In response the child shows a variety of characteristics which may be interpreted as an attempt to cope or survive. These include withdrawal with poor eye contact, and rhythmical stereotypes such as rocking, flapping and spinning. Because of a lack of interactive response to the environment, these children are often diagnosed as severely retarded or autistic.

Five of the seven children whose behavior was characterized by disorganized sensory input showed major improvement as a result of the Hemi-Sync environment. Changes included: a) a reduction in tactile hypersensitivity and overall sensory defensiveness, b) an improved focus of attention for learning sensory discrimination, c) a reduction or elimination of coping strategies (withdrawal, poor eye contact, rocking, general autistic behaviors), d)improved sensori-motor organization resulting in improved movement patterns e) greater spontaneous exploration of the environment. Two children with uncontrolled seizures showed a marked reduction in seizures as their ability to organize sensory input increased. The two children who had negative reactions to Hemi-Sync showed severe problems with sensory organization. It is hypothesized that the signal added to their overall sensory processing problems.

DISTRACTIBILITY can be defined as a less-severe manifestation of sensory disorganization. Children with this behavioral characteristic typically had difficulty sustaining a focus of attention to a task. Shifts of attention occured with tactile, auditory and visual distractors. Several children were described as being hyperactive. A mild degree of tactile defensiveness was also seen. This correlation between tactile defensiveness and a hyperactive attention has been previously described in the literature. As a result of the poor focus of attention these children showed difficulty learning or retaining information and poor sustaining of coordinated muscle contraction. Increases in abnormal muscle tone and abnormal movement patterns were associated with attentional shifts in two children with severe athetoid cerebral palsy.

Four of the seven children whose learning was affected by poor focus of attention showed clinically measurable gains when treatment was provided with a Hemi-Sync background. Attention was more focused and the child was able to attend to activities involving listening and processing information. Two children with expressive language delays spoke their first words within a month of introducing the Hemi-Sync music. Three children made major gains in oral feeding and motor skills as a result of a more sustained focus of attention.

Three of the seven children in this group showed minimal gains in improving their attentional focus and reducing hyperactivity. Each of these children had a history of severe respiratory disorder. This varied from structural lung disorders related to prematurity to severe respiratory incoordination with irregular breathing and breath-holding. One child was on a portable oxygen unit. As a group, these children were unresponsive to Hemi-Sync. On days when the breathing was easier, two children were able to respond with greater attention and less hyperactivity. One child who eventually showed major gains in focusing attention was initially highly inconsistent in his initial response to Hemi-Sync. Because there was no negative reaction and the music assisted the therapist in meeting his needs in a more creative fashion, Hemi-Sync music was continued as a background to therapy. Over a three month period (24 sessions) a change was observed in his breathing patterns. As the breathing became more regular and breath-holding incidents reduced, his attentional response to Hemi-Sync improved and he showed a consistently positive response to his therapy sessions. This was particularly significant since the no measurable gains had been seen in therapy for 9 months. It is possible that the other children with respiratory problems would also have profited from a longer trial with Hemi-Sync.

MOTOR INCOORDINATION DIFFICULTIES are characteristic of children with cerebral palsy. The connection between the mind and body has received relatively little attention in these children. The involuntary body movements associated with athetoid and ataxic cerebral palsy frequently make it difficult for the child to focus attention for learning. In a similar fashion, difficulty sustaining a focus of attention can increase the involuntary shifts in muscle tone and abnormal movement patterns. Difficulties can include respiratory incoordination, involuntary movement and increases in muscle tone during thinking, and loss of postural stability when distracted.

Three children initially showed major difficulties in the relationship between attention and movement. Gains during the period of Hemi-Sync usage included a) regularization of breathing patterns with more sustained vocalization, b) more sustained trunk control and postural stability, c) more normal movement patterns during sleep at night with greater ease of handling for dressing in the morning, d) reduction of incoordination of feeding movements, and e) easier learning of new motor patterns during therapy.

FEAR OF CHANGE IN VULNERABLE AREAS is common in disabled children who have had a stormy medical history. Long periods of hospitalization can create a deep-seated mistrust of adults and new experiences. Severe respiratory problems can create an underlying fear of any experiences which stress breathing. Children with severe feeding problems often experience repeated failures and perceived threats to survial as they deal with problems of choking, aspiration and tube feedings. As the child deals with negative or stressful experiences and repeated failures, he begins to erect behavioral barriers which protect against further failure or perceived danger. These barriers can make it difficult for the tube-fed child to develop the oral motor skills which could eventually lead to oral feeding.

The addition of Hemi-Sync and music to the oral-motor treatment program was highly beneficial for eight children who were fed by gastrostomy tube. There was less overprotection of the mouth and respiratory system and a greater willingness to use the mouth for exploration and discovery. It became easier for the child to develop a trust in the guidance of the therapist. It was also easier for the therapist to develop a trust in the child's inner wisdom and develop a program which introduced new experiences without pushing.

BENEFITS TO OTHERS SHARING THE HEMI-SYNC ENVIRONMENT WITH THE CHILD are seen as part of the overall change. When Hemi-Sync music becomes part of the therapy or home environment, it creates a shared envelope of sound which surrounds the child, therapist and family members. Changes during therapy sessions are related to the direct effect of the signals on the child's central nervous system and the indirect effect of the signals on the information processing abilities of the therapist and parents. Because the Hemi-Sync signals contribute to a greater balance of activity of right and left hemispheres and cortical and subcortical areas of the brain, the adult working with the child is able to draw from a full repertoire of information processing abilities. There appears to be a greater awareness of non-verbal or subtle communicative signals and a greater trust of intuitive knowledge which may guide the therapy session.

Parents have reported changes in their own reactions to activities with the child when the tapes were used at home. One mother volunteered that she felt very relaxed when feeding her son and less angry and impatient with his feeding problems. Another mother was initially quiet and withdrawn during therapy sessions held at her home. She was often out of the room during therapy. She was interested in using Hemi-Sync tapes at home because she knew that her son was happier with the music. Within a month of regular Hemi-Sync use at home, she was more outgoing, wanted to be present during therapy sessions and offered more spontaneous comments about his progress and needs. Changes have also been observed in brothers and sisters. This was particularly evident when tapes were played for 45 minutes as children who shared a room were going to sleep. One sibling showed a reduction in bed-wetting and another showed major improvements in her school work.

CONCLUSIONS

The results of this informal study show that Hemi-Sync in a musical format can be an effective adjunct to a pre-speech and feeding rehabilitation program. It serves to enhance the effectiveness of a program which is appropriate to the child's needs. The fifteen children (75% of the group) who made gains in the program had not made similar gains when the program was implemented without the Hemi-Sync background. Significant changes occurred in thirteen of these children within the first two Hemi-Sync sessions.

It is important to establish a point of reference or baseline for the child's behavior and skills without the use of the Hemi-Sync music background. Any changes which occur as Hemi-Sync is added to the program can be interpreted more meaningfully. The effectiveness of Hemi-Sync appeared to be cumulative. Children responded more consistently to sessions with Hemi-Sync as their experience with the signals increased. As the child experienced a more balanced and organized way of dealing with the sensory input for learning, it became easier to re-create this new organization when the Hemi-Sync signals were not present. It is significant that major permanent changes were seen in children who experienced Hemi-Sync less than three hours per month. Hemi-Sync contributes to long-term changes in the child's abilities and ways of organizing information.

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EFFECTS OF REST AND HEMISPHERIC SYNCHRONIZATION COMPARED TO EFFECTS OF REST AND GUIDED IMAGERY ON THE ENHANCEMENT OF CREATIVITY IN PROBLEM-SOLVING

SUBMITTED BY DEBORAH BAKER, PHD.

Finding ways to enhance creativity in problem-solving during a floating experience, Dr. Deborah Baker, a counseling psychologist and hypnotherapist based in Metairie, LA, compared the effects of rest (flotation) and Hemi-Sync with the effects of rest and guided imagery.

Ten individuals (seven males and three females from 24 to 51 years of age) participated in the experiment. Prior to their flotation they were briefed on the purpose of the experiment, instructions on floating, and the cassette tapes to be used.

The tapes included: 1) HEMI-SYNC PROBLEM SOLVING 12, which guides the individual to Theta to greatly enhance imaging ability. Subjects were instructed to send their problem or question out through their total awareness, release it, and wait for the answer to come back; and 2) GUIDED IMAGERY: MEETING AN INNER GUIDE, developed by Dr. Baker, with the background music, "Silk Road," by Japanese composer/musician Kitaro. Instructions consisted of deep breathing, sensing the color green, countdown from 10 to 1 to reach an ideal level of mind to accomplish whatever purpose one has. Then, one is guided to a beautiful, magical garden, a waterfall, and meets with someone who knows and loves them, wherein a nonverbal exchange can be had and problem-solving or creative interaction can take place. (Time of nonverbal communication is approximately 15-17 minutes).

The participants were instructed to enter the flotation tank with a specific question to ask or problem to solve, although none knew prior to the experience which tape they would hear. They were asked not to discuss any of their experiences with other participants for the duration of the study.

After entering the flotation tank, a wooden construction measuring 48" x 90" and containing a 10" solution of epsom salts and water, the subjects floated in a supine position wearing light-weight headphones (waterproofed with plastic wrap and duct tape) that were connected to a stereo cassette player outside the tank. Participants had approximately 15 minutes to become familiar with the float experience before the cassette began.

When the tape finished, participants met with Dr. Baker to debrief, write down their experience, and complete a questionnaire. They rated a variety of criteria on a scale of one (being the lowest or least ability to accomplish) to five (being the highest or greatest ability to accomplish). The questionnaire allowed them to compare floating alone (FA), floating with guided imagery (GI), and floating with Hemi-Sync (HS). In the percentages listed below, an answer had to fall on the scale at 4 or above.

	FA	GI	HS
Ability to Relax	40%	70%	90%
Stopping Internal Dialogue	20%	50%	70%
Ability to Reduce Discomfort	40%	70%	70%
Ability to Concentrate	0%	70%	70%
Enough Time Allowed	20%	40%	80%
Increased Energy Levels	20%	40%	70%
Dreamlike State	20%	30%	70%
Answer Received is a Workable Solution	0%	50%	70%

As a therapist, Dr. Baker suggests that combining the float experience with Hemi-Sync and guided imagery provides a psychological tool - to reduce anxiety levels in the interview situation; to reach deep-seated levels which have resisted penetration by most traditional means and correct those thoughts or submerged ideas; to reduce stress.

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THIRD ANNUAL PROFESSIONAL SEMINAR

The Monroe Institute's Third Annual Professional Seminar was a great success. Not only were the various presentations by our professional members fascinating and informative, but the networking that took place (both professionally and socially) was also an important activity. Some of the topics discussed (such as Dr. Morris' in this newsletter) will be presented in forthcoming issues of the BREAKTHROUGH NEWSLETTER.

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